

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior version, and listing, of claims in the application:

Listing of Claims:

- 1-28. (Cancelled)
29. (New) An inshot gas burner for use in a furnace that includes
a venturi tube having a converging inlet section and a diverging outlet section that communicates through a restricted throat wherein an angle of divergence of the outlet section is greater than 4° and further includes a generally cylindrical flame retainer housing at the exit of said outlet section which houses a flame retainer,
a spud holder is axially aligned with said venturi tube adjacent to the entrance to the inlet section wherein the axial distance as measured over the spud holder and the flame retainer housing of the venturi tube is less than 5.00 inches and the burner capacity is between 5,000 and 5,800 Btus per inch of burner per hour,
wherein the throat has a diameter in the range of 0.650 inches and 0.70 inches.
30. (New) The gas burner of claim 29 having a firing rate of at least 9,900 Btus per inch of diffuser length.
31. (New) The gas burner of claim 29 wherein the throat has a diameter of about 0.682 inches.
32. (New) The gas burner of claim 29 wherein the exit diameter of the diverging section of the venturi tube is about 1.44 times that of said throat.

33. (New) The gas burner of claim 29 wherein the entrance diameter of the converging section of the venturi tube is about 2.11 times that of the throat.
34. (New) The gas burner of claim 29 wherein the throat of the venturi tube is located an axial distance from the entrance to the venturi tube that is about 25% of the total combined axial length of the venturi tube and the flame retainer housing.
35. (New) The gas burner of claim 29 wherein the angle of divergence of the outlet section of the venturi tube is between 4° and 5° .
36. (New) The gas burner of claim 29 wherein the axial length of the flame retainer housing is at least 12% that of the combined length of the venturi tube and the housing.
37. (New) The gas burner of claim 29 wherein said flame retainer has an annular hub and a plurality of axially aligned splines that are equally spaced about the hub and has an inside diameter that is about 80% that of the throat diameter of the venturi tube.
38. (New) The gas burner of claim 37 wherein the outside diameter of the flame retainer is about equal to the exit diameter of the diverging section of the venturi tube.
39. (New) The gas burner of claim 38 wherein the axial length of the flame retainer is about one-third that of the outside diameter of the flame retainer.

40. (New) The gas burner of claim 29 wherein the flame retainer is an annular member having an inside diameter and an outside diameter and a series of through holes equally spaced about a hole circle centrally located between the outside diameter and the inside diameter.

41. (New) The gas burner of claim 40 wherein the outside diameter of the flame retainer is about 2.23 times that of the inside diameter.

42. (New) The gas burner of claim 41 wherein the outside diameter of the flame retainer is about 6.62 times that of each through hole.

43. (New) The gas burner of claim 42 wherein the flame retainer is about one third of its outside diameter.

44. (New) The gas burner of claim 29 wherein the overall length of the burner is less than 4.0 inches.

45. (New) An inshot gas burner unit for use in a furnace or the like that includes, a top plate having a plurality of axially aligned, spaced apart stampings, each of which describe the top half of a burner,

a bottom plate having a plurality of axially aligned, spaced apart stampings, each of which describes the bottom half of a burner,

means for joining together the two plates in face-to-face contact to establish a plurality of burners, each of which includes a spud holder having an entrance that is coextensive with

one side edge of the cojoined plates, a venturi tube adjacent to the spud holder that includes a converging inlet section and a diverging outlet section that communicates through a restricted throat and an integral flame retainer housing at the exit of the diverging section that contains a cylindrical flame retainer, the exit of said flame retainer housing being coextensive with an opposing side edge of said plates, the angle of divergence of the outlet section being greater than 4° ,

said plates further including openings extending between the exit of each spud holder and the entrance to an adjacent venturi tube, and

the axial length of each burner as measured over the spud holder and the flame retaining housing being less than 4 inches and each burner having a capacity of between 5,000 and 5,800 Btus per inches of length of burner per hour,

wherein said throat has a diameter in the range of 0.650 inches and 0.70 inches.

46. (New) The assembly of claim 45 further including crossover channels formed in one of said plates that extend between the diverging sections of adjacent venturi tubes.

47. (New) The assembly of claim 46 that further includes an igniter means for igniting gas at the outlet of one of said burners whereby the remaining burners are ignited through the connecting crossover channel.

48. (New) The burner assembly of claim 47 wherein said igniter means is associated with a first burner located at one end of the burner alignment and further includes a flame sensor operatively associated with a second burner located at the opposite end of the burner alignment.

49. (New) The burner assembly of claim 45 wherein the exit diameter of the diverging section of the venturi tube is about 0.98 inches.
50. (New) The burner assembly of claim 45 wherein the angle of divergence of the outlet section of the venturi tube of each burner is between 4° and 5°.
51. (New) The burner assembly of claim 45 wherein the entrance diameter of the venturi tube of each burner is between 1.4 inches and 1.5 inches.
52. (New) The burner assembly of claim 45 wherein the combined length of the venturi tube and flame retainer housing of each burner is between 2.9 inches and 3.0 inches.
53. (New) The burner assembly of claim 45 wherein the throat of the venturi tube of each burner is located between 0.690 inches and 0.710 inches from the entrance of the tube.
54. (New) The burner unit of claim 45 wherein the outside diameter of the flame retainer is about equal to the exit diameter of the venturi tube.
55. (New) The burner unit of claim 54 where the axial length of the flame retainer is about 0.38 inches.